

Ready. Set. Go! ... almost



Asset Management at S.F. BART



- AGENDA
 - Background
 - Premise
 - Assumptions
 - Specific Objectives
 - Approach
 - Take-Aways

- **BACKGROUND**

- Opened September 1972
- Serve ~380K patrons/day
- 104 miles, 44 stations
- 669-car fleet
- 5'6" gauge on
- 1000 VDC
- 80 MPH (avg. 33) with 20" station stops
- Currently valued at about \$25B
- Fragmented inventory and condition data
- Major technology transition in progress



- PREMISE

- What do we have?
- What is its condition?
- What do we need to do about it?
- When do we need to do it?
- How will we pay for it?
- What are the risks?
- How will performance be affected?
- How will region be affected?
- Necessity to be the “mother of smart solutions”

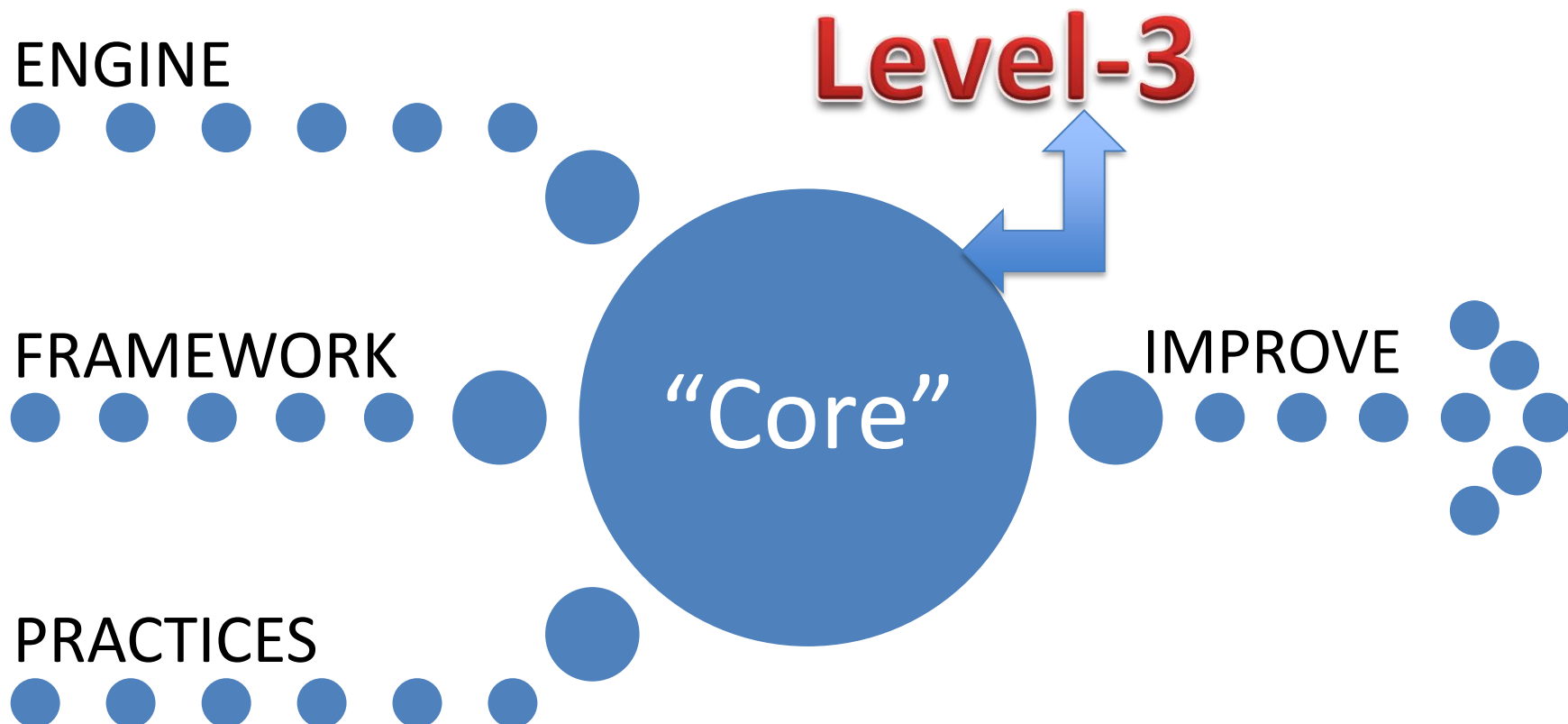
- ASSUMPTIONS

- Unlikely we'll ever have enough money
- Drive backward from the destination – the NTD
 - **CMMS-> TERM-Lite -> RTCI -> MTC -> FTA**
- Urgent need to
 - Develop complete asset portfolio/register
 - Develop the ABS (Asset Breakdown Structure)
 - Assess complete/accurate condition ... in stages
- Follow path of least resistance (McGyver it!)
 - Use what's available and laying around
 - TERM Lite
 - IIMM, PAS-55

- SPECIFIC OBJECTIVES

- Create prioritized, time-phased **CapEx** and **OpEx**
- Clearly understand and communicate risks
- Clearly understand and communicate performance and service impacts

- APPROACH



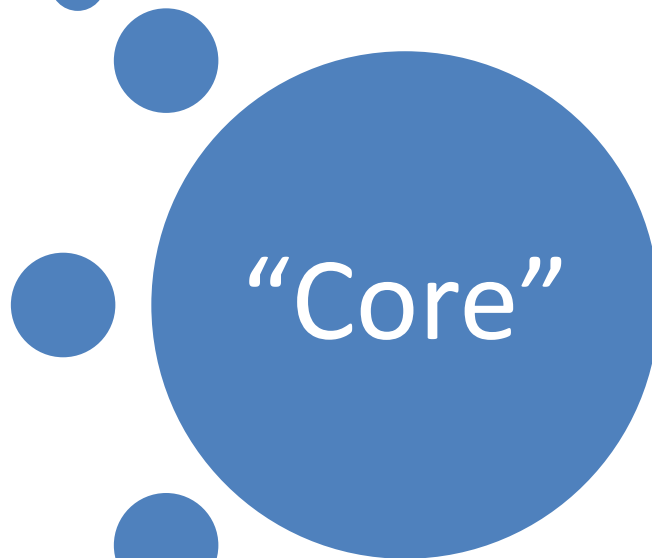
ENGINE **CMMS + TERM-Lite + PPM**



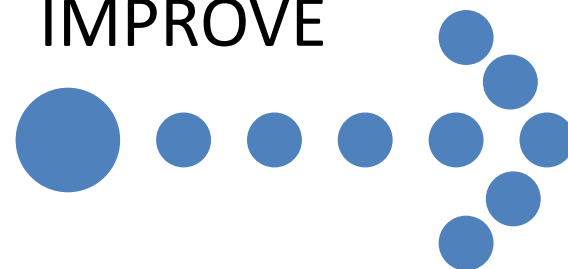
FRAMEWORK



PRACTICES

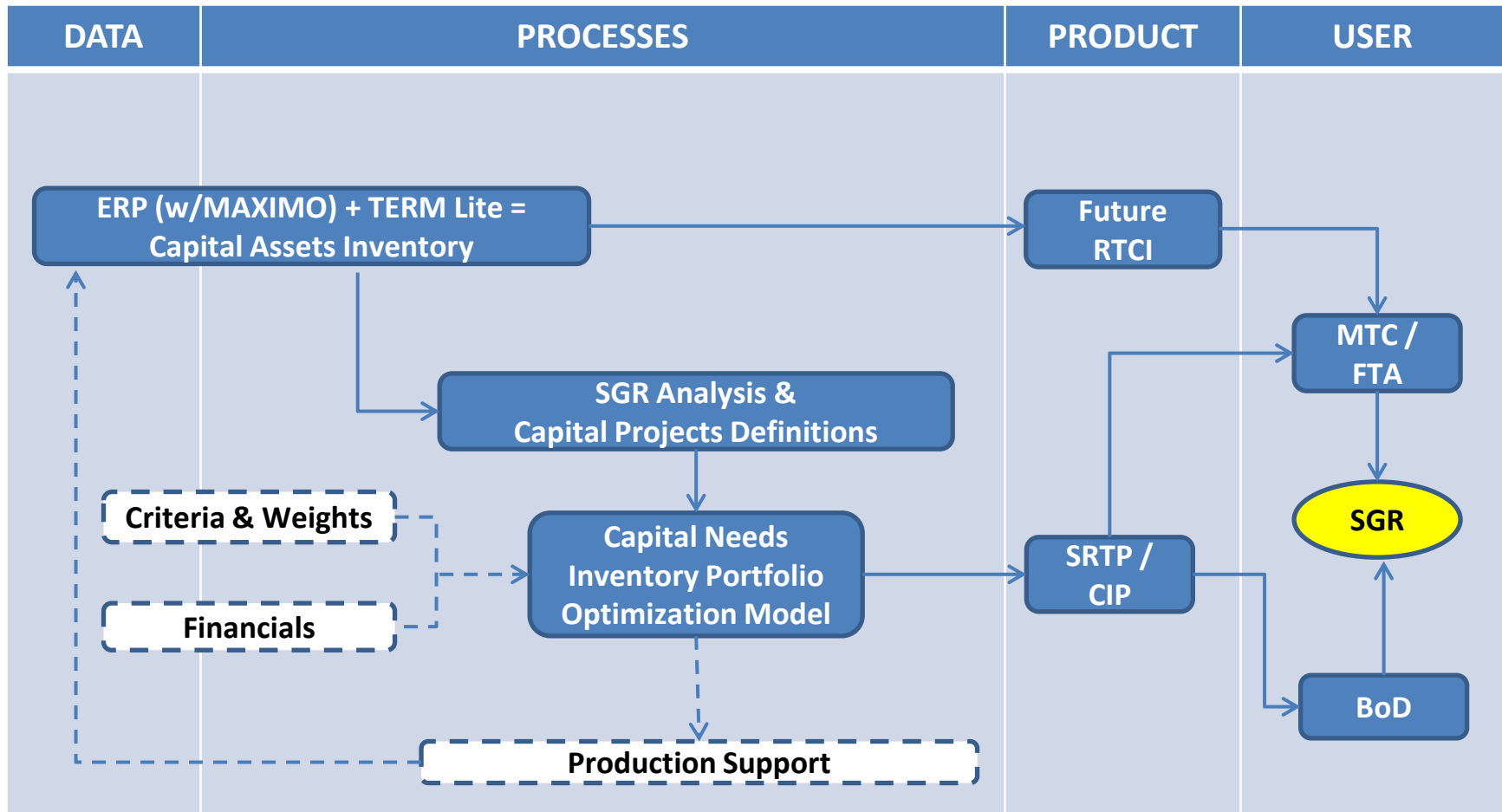


IMPROVE



- ENGINE:
 - Develop the inventory (in progress)
 - Instrument to accommodate attributes
 - Enable as single work authorization system
 - Use smart tech to accelerate data collection
 - Define ABS based on TERM-Lite's model
 - Preliminary SGR condition analysis via TERM-Lite
 - Define preliminary CapEx/OpEx
 - Reconcile CapEx based on 'expert judgment' with 'decay curve'-based analysis
 - Prioritize and time phase CapEx via PPM

- BEAM (BART's Enterprise Asset Management)



ENGINE

CMMS + TERM-Lite + PPM

FRAMEWORK

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PRACTICES

“Core”

IMPROVE

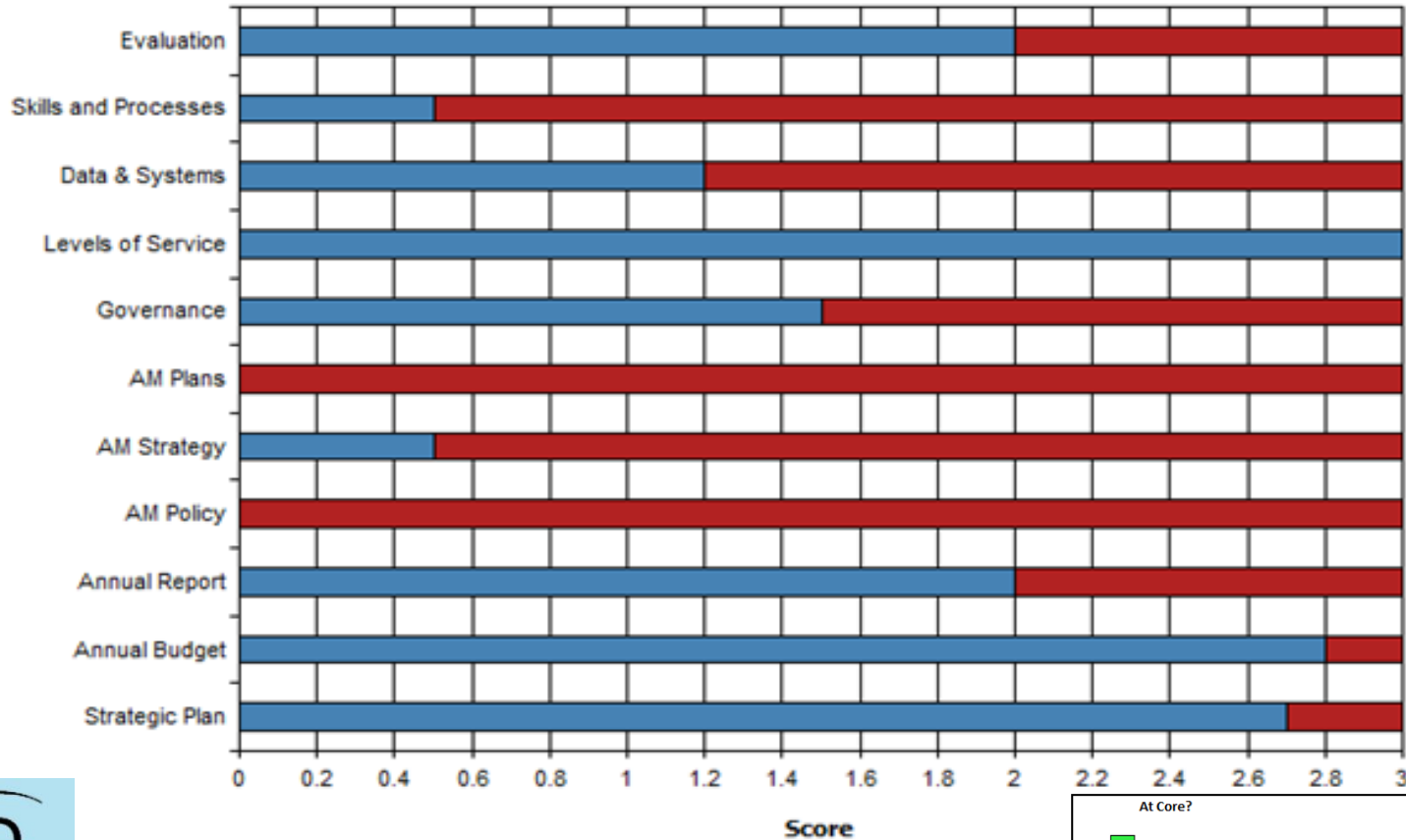
- FRAMEWORK:
 - Conduct Asset Management Maturity Assessment
 - Establish governance elements
 - Establish policy, strategy and standards
 - Develop [one or more] AM Plan[s]
 - Train staff and develop capacity to do this!!
 - Develop a risk register and manage risks
 - Update the Strategic Long Term Plan
 - Develop a dashboard reporting capability
 - Integrate Knowledge Management elements
 - Achieve “Core” maturity level

Maturity Assessment Result

BART - Maturity Assessment ID 104

Risk Level

Practice Area



At Core?	Risk	RI	Core Target
N	H	High	Dec-12
N	H	High	Dec-13
N	H	High	Dec-13
Y	L	Low	May-12
N	M	Moderate	Dec-12
N	VH	Very High	Dec-12
N	VH	Very High	Dec-12
N	H	High	Dec-12
P	M	Moderate	Dec-12
P	L	Low	Dec-12
P	H	High	Dec-12



4th

NOTE: Only 3 of 5 levels shown

FEDERAL TRANSIT ADMINISTRATION
State of Good Repair Roundtable

July 16-18, 2012 Philadelphia, PA

At Core?

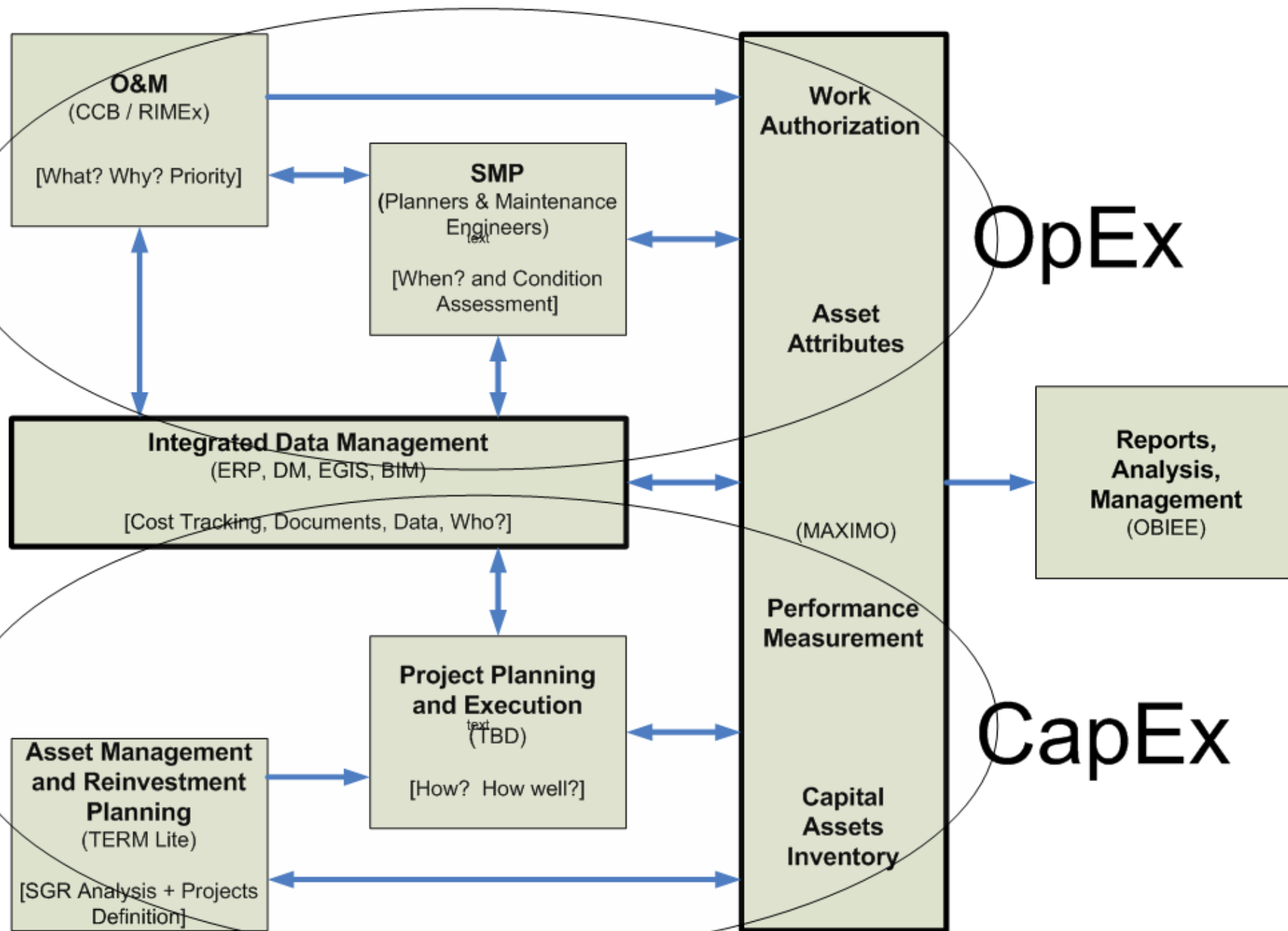
- Y Materially at Core Level
- P Partial - Additional Work Needed
- N No substantial commencement

RI - Resource Index

- High Resource to Achieve and Maintain Core Level
- Moderate Resource Input to Achieve and Maintain Core Level
- Low Resource Input to Achieve and Maintain Core Level

Risk

- L Low Risk
- M Moderate Risk
- H High Risk
- VH Very High Risk



Service Aims

- A Quality Customer Experience
- A Mission & Value-Driven Workforce
- A Stable, Sustainable System

BART is a high-quality transit service that supports a sustainable region

Mission

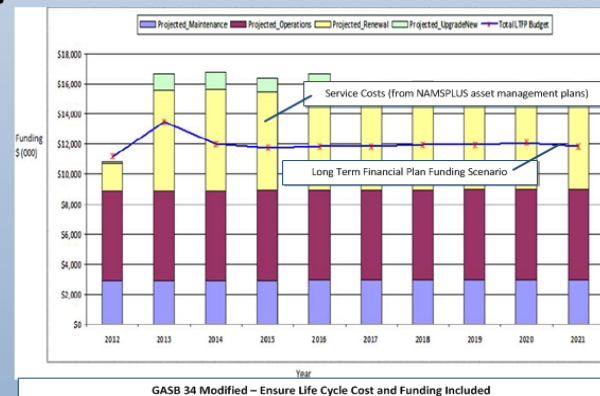
Provide safe, clean, reliable and customer-friendly regional public transit service that increases mobility and accessibility, strengthens community and economic prosperity and helps preserve the Bay Area's environment.

Service Activities, Service Levels and Risks (Sample Data)

	Current	10 yrs	Risk	Confidence	10 Yr	LCC	10 yr
(C1) - System Renewal							
C1A1 - System Renovation Plan							
C1B1 - Rail Vehicle Replacement Plan							
C1C1 - Strategic Maintenance Plan (SMP)							
C1D1 - Infrastructure Evaluation Study							
C1E1 - Current Operations Support Preliminary Study							
C1F1 - Business Acquisition Plan Phase II							
(C2) - Real Estate							
(C3) - Service Enhancements							
C3A1 - BART Core Service							
C3A2 - Board							
C3C1 - Smart Card Program							
(C4) - Station Access							
C4A1 - Station Access Program							
C4B1 - Station Safety Program							
C4C1 - Station Safety Program							
(C5) - Customer Environment							
C5A1 - Station Information Program							
C5B1 - Uniform Design							
C5C1 - Accessibility Improvements							
C5C2 - Other							
C5D1 - BART Police Program							
C5D2 - Board							
C5E1 - BART Security Programs							
C5F1 - Train Interior Upgrade							
(C6) - Customer Information							
C6B1 - Real Time Information Program							
(F1) - Capital							
F1A1 - Capital Projects							
(F2) - System Expansion							
F2A1 - BART project							
F2B1 - Warm Springs Project							
F2C1 - Silicon Valley Rapid Transit (SVRT) Project							
F2D1 - Livermore project							
(F3) - Financial Stability							
F3A1 - Productivity/Adjusted Cost Per Mile Increases							
F3A2 - Board							
F3B1 - Other							
(F4) - Performance for Fin. Health							
F4B1 - Legislative and Community Outreach Program							
F4D1 - Employer Transit Plan							
(F5) - BART Culture							
F5D1 - Customer Service Program							
(F6) - Diversity							

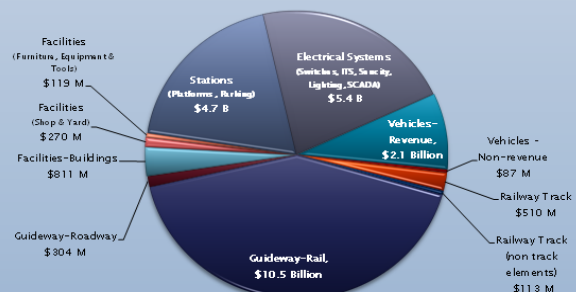
Asset Class	Replacement Value (\$M)	Annualized Cost (\$M)	Annualized Budget (\$M)
Stations	\$4,700	\$470	\$470
Electrical Systems	\$4,400	\$440	\$440
Vehicles	\$2,100	\$210	\$210
Facilities	\$1,100	\$110	\$110
Guideway - Rail	\$1,000	\$100	\$100
Guideway - Roadway	\$300	\$30	\$30
Facilities - Buildings	\$811	\$81	\$81
Facilities - Shop & Yard	\$270	\$27	\$27
Facilities - Future Equipment Tools	\$119	\$12	\$12
Total	\$25,000	\$2,500	\$2,500

Resource Strategy (Sample Data)



Assets

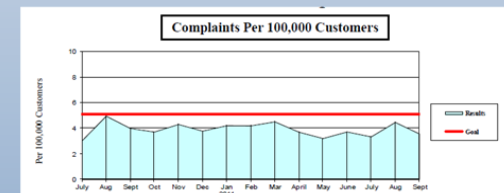
Current Replacement Value \$25 Billion



Service Levels -Scenario 2 (Sample Data)



Customer Complaints



ENGINE

CMMS + TERM-Lite + PPM

FRAMEWORK

NAMSPlus.US

PRACTICES

“Core”

IMPROVE

Strategic Maintenance Program

- PRACTICES:
 - A systematic effort to modernize the way we conduct our maintenance work
 - Predictive
 - Reliability-centered
 - Integrate condition measurements
 - Collect, store, analyze asset data
 - Substitute actual data for decay curves over time
 - Decide on reinvestment priorities based on risk, performance and service requirements and costs
 - Improve and standardize PgM and PM practices

- TAKE-AWAYS
 - The journey has no final destination
 - Assess your current status (you may be surprised)
 - Do not reinvent the wheel
 - Collaborate internally and externally
 - Define the processes first, then apply technology
 - Define “good enough”, then consider further improvement goals and drivers
 - Place the risk burden where it belongs
 - Stare down institutional cynicism
 - KISS it! ... for the sake of the ‘natives’

- THANK YOU!
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